

## Elements of the Periodic Table Lab

**Directions:** This is a station lab. Your group will move from station to station exploring the elements of the periodic table:

### Station 1

**You should have Elements A and B at this station.**

- a) Which element is most likely to conduct electricity?
- b) Which element is malleable?
- c) Which is a brittle solid?
- d) What is the color of element B?
- e) Define ductility. Which element is ductile?
- f) Classify element A as a metal, non-metal or metalloid.
- g) Classify element B as a metal, non-metal or metalloid.
- h) Which element has more non-metallic character?
- i) Which element has a sea of mobile electrons?
- j) Which family do you think element B belongs to?

## Station 2

You should have elements C and D at this station.

- a) Which element is most likely to conduct electricity?
- b) What is the physical state of element D?
- c) Element D is used in signs. What do you think element D is? Which family does it belong with?
- d) Which one of these two elements is ductile?
- e) Element C is found in group II on the periodic table. What do you think it is?
- f) How many valence electrons does element C have?
- g) Use three terms to describe element C.
- h) Which element do you think has a higher electronegativity, element C or element D?
- i) Which element do you think has a higher first ionization, element C or element D?
- j) Which element do you think has a larger atomic radius, element C or element D?
- k) In your words describe the term ionization energy.
- l) Which have higher ionization energies, metals or non-metals? Explain your answer.

## Station 3

You should have elements **E (Iodine)** and **Element F (Sodium)** at this station.

- a) Classify each of the elements as a metal, non-metal or metalloid.
- b) Element E belongs to which family?
- c) You come across another element that is a greenish gas and has 17 protons. Which element (E or F) has similar chemical properties?
  - a. Explain
- d) Element E is usually found in nature as  $I_2$ . There are six other elements in nature that are also found as a pair. Name the other six using the elemental symbols. (ex:  $I_2$ )
- e) Write the electronegativity for Element E and Element F.
- f) Write the first ionization energy Element E and Element F
- g) Write the Atomic Radius for Element E and Element F.
- h) How does element E becomes an ion?
  - a. Is the ionic radius larger or smaller than when it was an atom?
- i) How does element F becomes an ion?
  - a. Is the ionic radius larger or smaller than when it was an atom?

j) Which element is a good conductor of electricity?

k) Element F belongs to which family?

a. What is unique about elements in this family?

## Station 4

**You should have elements G (Carbon) and Element H (Aluminum) at this station.**

a) Classify each of the elements as a metal, non-metal or metalloid.

b) Define malleability.

a. Which element is malleable?

c) Element G is found in many places. Name (3) places where we find this element.

d) Which element is most likely to lose electrons?

a. Explain

e) Element G is found in different forms, these are called allotropes. Name (2) of the forms.

f) How many protons does element H have?

g) When element H becomes an ion, does it become larger or smaller?

- h) What is the electron configuration of element G when it becomes an ion?
- i) Make a prediction; which element has a larger first ionization energy?
- a. Look up the values and write them below. Were you correct?
- j) What is the trend for electronegativity in periods and families on the periodic table?
- k) Which element has a stronger desire for another element's electrons when in a chemical bond?
- a. Explain your answer.